

In the Claims:

Please further amend claims 5 and 8 as set forth below in the "Listing of Claims".

LISTING OF CLAIMS

Claims 1-4 (Canceled)

Claim 5 (Currently Amended): A thermal processing unit for conducting a thermal process to a plurality of objects to be processed held in a tier-like manner in a processing container, wherein

the processing container is cylindrically shaped and made of metal,

a heating unit that heats the objects to be processed, and a cooling-gas introducing unit having a plurality of blowing holes for introducing a cooling gas into respective areas in the processing container divided in a height direction of the objects to be processed, are provided in the processing container,

a circular space is formed between the processing container and the plurality of objects to be processed held in a tier-like manner,

the cooling-gas introducing unit is a cooling-gas introducing pipe arranged in the circular space and extending in a vertical direction,

the plurality of blowing holes is formed at suitable intervals in the vertical direction of the cooling-gas introducing pipe, and

each blowing hole is formed at a pipe wall of the cooling-gas introducing pipe in to face in the circumferential direction of the processing container such a manner that each blowing hole blows out the cooling gas in a tangential direction of the circular space.

Claim 6 (Original): A thermal processing unit according to claim 5, wherein a plurality of cooling-gas introducing pipes is arranged at suitable intervals in a circumferential direction of the circular space.

Claim 7 (Previously Presented): A thermal processing unit according to claim 6, wherein the plurality of cooling-gas introducing pipes has different lengths in the vertical direction.

Claim 8 (Currently Amended): A thermal processing unit for conducting a thermal process to a plurality of objects to be processed held in a tier-like manner in a processing container, wherein

the processing container cylindrically shaped and is made of metal,

a heating unit that heats the objects to be processed, and a cooling-gas introducing unit having a plurality of blowing holes for introducing a cooling gas into respective areas in the processing container divided in a height direction of the objects to be processed, are provided in the processing container, and

the blowing hole is provided with a porous member;

wherein the cooling-gas introducing unit is a cooling-gas introducing pipe arranged in a circular space and extending in a vertical direction, the circular space being formed between the processing container and the plurality of objects to be processed held in a tier-like manner, and

wherein each blowing hole is formed at a pipe wall of the cooling-gas introducing pipe in to face in the circumferential direction of the processing container such a manner that each blowing hole blows out the cooling gas in a tangential direction of the circular space.

Claim 9 (Previously Presented): A thermal processing unit according to claim 5, wherein the processing container has a volume of about 170 liter, and

the cooling-gas introducing unit is capable of introducing a cooling gas into the processing container at a flow rate of 300 to 500 liter / min.

Claim 10 (Previously Presented): A thermal processing unit according to claim 5,
wherein

the processing container has a container-cooling unit in which a coolant flows.

Claim 11 (Original): A thermal processing unit according to claim 10, wherein
the cooling-gas introducing unit and the container-cooling unit are capable of cooling the
objects to be processed to a temperature of 400 °C to 100 °C at a temperature-fall rate not less
than about 40 °C / min.

Claim 12 (Previously Presented): A thermal processing unit according to claim 8,
wherein

the processing container has a volume of about 170 liter, and
the cooling-gas introducing unit is capable of introducing a cooling gas into the
processing container at a flow rate of 300 to 500 liter /min.

Claim 13 (Previously Presented): A thermal processing unit according claim 8, wherein
the processing container has a container-cooling unit in which a coolant flows.

Claim 14 (Previously Presented): A thermal processing unit according to claim 13,
wherein

the cooling-gas introducing unit and the container-cooling unit are capable of cooling the
objects to be processed to a temperature of 400 °C to 100 °C at a temperature-fall rate not less
than about 40 °C / min.